Estimation of Effective Comfort Index in a Domicile Using Gas Sensor Output

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As human beings age, their sensitivity to the thermal index decreases. Therefore, it is necessary to compensate for their lack of sensitivity. Design which creates a comfortable environment is also necessary for a residential space for the aged. Therefore, in this study an attempt was made to estimate the comfort index using a tin oxide gas sensor. Temperature, humidity and gas sensor output in an experimental room were measured for 2 years. The comfort index was evaluated according to a five grade scale by an occupant. The data for temperature and humidity were clustered using the LBG algorithm which is named after its devisers Linde, Buzo and Gray, and the correspondence was investigated between the clustering result and the comfort index. It was clarified that the comfort index in a residential environment is influenced by temperature and humidity. It is known that the sensor output is also significantly influenced by temperature and humidity. Then, the membership function was derived from the data for the comfort index and the sensor output. By applying the membership function, the comfort index can be estimated using the sensor output.